of age, and of a strong constitution. The whole six children lived long enough to be baptised, but died in the evening of the day of their birth. The mother suffered from a severe indisposition subsequent to her confinement, but is now quite well.—*Gaz. Médicale.*

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6. *On some of the Phenomena Attendant on Suffocation by Carbonic Acid in Man.* By ALFRED S. TAYLOR, Esq., Lecturer on Medical Jurisprudence. Where this gas has been inspired in a state of great purity, death is an almost instantaneous result. It is seldom that any sound is uttered prior to dissolution, or that the being gives any indication of pain or suffering. According to the experiments of Sir Humphrey Davy, the gas does not, under these circumstances, penetrate into the pulmonary organs, the glottis closing spasmodically, and obstructing its entrance; but this experimentalist perceived a strong and pungent sensation in the mouth and fauces, while the gas had a distinctly acid taste. When diluted with air, the symptoms which it produces are those of narcotism, and the patient commonly dies apoplectic.[*] The incipient symptoms of poisoning by carbonic acid are not very often witnessed; but, from cases which have been published by M. Collard de Martigny and others, in the Archives Générales de Médecine, it would appear that giddiness, vertigo, ringing in the ears, with indistinctness of vision, commonly precede the state of insensibility in which those who have respired it have been found. Convulsions have not unfrequently been observed, and in those cases in which recovery has taken place there has often remained a partial paralysis of the muscles of the face or limbs, with stupor and head-ache.

The post mortem appearances exhibited in the bodies of those who have been poisoned by carbonic acid, are not of a very definite character. The surface has been usually found more or less livid, especially the face, which is described as being composed and tranquil. The animal heat is long retained, and consequently the cadaverous rigidity of the muscular system is a much longer time than usual in developing itself. The right side of the heart, and the great vessels connected with it, have been found gorged with blood. The vessels of the lungs and of the brain have also been found in the same state by various observers; but in the few experiments which I have made on animals, I have rarely witnessed that engorgement of the cerebral vessels which has been described by Portal and Mertzdorff. Where the lungs were excessively distended, the vessels of the brain contained but a small quantity of blood; and this I had occasion to observe more particularly in those cases in which the acid had proved fatal when respired in a diluted state. The appearances, it will be seen, do not differ from those of asphyxia generally; and hence, for the detection of the cause, we must rely upon general or circumstantial evidence.

There has been great variety of sentiment among experimentalists as to the precise manner in which this gas produces a deleterious action on the economy. By some it has been regarded as a directly poisonous agent; while Nysten, who is followed by Orfila, considers that the results of his experiments have established the contrary. This physiologist, who experimented largely on the gases, with a view to arrive at some precise data, in order to determine their mode of action, came to the conclusion that carbonic acid, like nitrogen and hydrogen, destroyed life merely by its negative influence on the system.

In order to determine the relatively poisonous properties of gases, Nysten adopted the plan of injecting them, in certain quantities, into the blood-vessels. In this way he was led to entertain the opinion that, while some exerted a specific influence, giving rise to peculiar symptoms, which were at the same time the rapid forerunners of death, others seemed to act more slowly, and to possess no essentially deleterious properties. Among the latter he placed carbonic acid, and his conclusions with regard to the influence of this gas on the animal economy are, 1st, that it may be injected in comparatively large quantities into the venous system, without interfering with the circulation; 2d, that it exerts no primary action on the brain, but, when injected in a greater quantity than can be held in solution by the circulating fluids, it gives rise to a violent distention of the texture of this organ, and causes death by apoplexy; 3dly, that, when injected under proper precautions, it produces merely a general debility of the muscular system, which passes off after a few days. In the performance of these experiments, unless the gas be thrown in with care, death may result from the mechanical violence produced by the forcible introduction of an elastic fluid into the blood-vessels; but this effect must be contradistinguished from those effects which result from the specific properties of the gas, since in this way the life of an animal may be as surely and as rapidly destroyed through the injection of pure atmospheric air, as through the injection of any other elastic compound, however deleterious.

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[*] These effects were observed to follow where three parts of the gas were diluted with seven of common air. It has been suggested by Dr. Paris, that a compound of this nature might be advantageously administered in certain diseases where sedatives are indicated; but I am not aware that this suggestion has ever been followed in practice.

The conclusions of Nysten were for a long time regarded as correct, and physiologists readily embraced the opinion he had formed, namely, that carbonic acid was not, *per se*, a poisonous agent. More recent observations have, however, led to more perfect views on the subject; and, although many still adhere to the old opinion, yet the majority of those who have deeply reflected on the subject seem now to agree that carbonic acid has a directly poisonous action on the economy. Nysten himself admitted that, among those gases which he had classed as negatively destructive, there were some which, when introduced into the lungs, appeared to act in a different manner to others. Thus the carbonic oxide was found to destroy life more quickly than nitrogen or the nitrous oxide; while the proto-phosphuretted hydrogen and carbonic acid act with greater rapidity than the carbonic oxide. Now, it is impossible to reconcile these differences with the supposition that the action of the gases above mentioned is merely negative; and hence we must be prepared to admit that they possess certain properties, which more or less distinguish them from each other. If, for instance, it be affirmed that the action of carbonic acid on the system differs not from that of nitrogen, it ought necessarily to follow that these gases may mutually replace each other; but this, by experiment, is not found to be the case. M. Collard de Martigny has ascertained that an atmosphere formed of carbonic acid and oxygen cannot be respired, even for a very short period of time, without producing fatal effects; and from this it is reasonable to conclude that its operation on the economy must be of a positively deleterious nature. This conclusion is still further strengthened by other experiments, undertaken by the same physiologist. Having enclosed animals in an atmosphere of carbonic acid, he allowed them to respire freely the pure atmospheric air; but still he found that the usual symptoms produced by the action of this gas on the economy manifested themselves, although it had not entered into the respiratory organs, and therefore could not have acted in the manner assumed by those who maintain an opposite opinion. If it be a fact that carbonic acid is capable of exerting its peculiar influence through any texture of the body, there can be no longer a doubt as to which side of the question our judgment should incline. The intoxicating power of certain fluids impregnated with this gas, as well as the dizziness, vertigo, and other symptoms of cerebral disturbance, which the long-continued use of them induces, have been long known; but it has been only recently suspected that the carbonic acid, by its action on the mucous membrane of the stomach, may have a considerable share in the production of these symptoms.

Without dwelling upon the importance of these observations, it will be sufficient to conclude this paper by a notice of the very ingenious experiments recently performed by Professor Rolando, of Turin; for this, even if all other proofs were wanting, is sufficient to set the question at rest. This distinguished physiologist, having separated the bronchi in a tortoise, succeeded in making it respire carbonic acid by one lung, and atmospheric air by the other: the animal died in the course of a few hours. To this experiment it may be objected that the respiratory process was impeded throughout one-half of the pulmonary system; and that, therefore, the animal may have perished, not from any positive action of the carbonic acid, but in consequence of the defective manner in which the process of respiration was necessarily conducted. In order to silence at once all objections on this head, the professor next secured by a ligature one of the bronchial tubes, having separated it from its fellow; and he found that the effects produced on the animal by the operation were but slight. The inference which he drew from the results of these interesting experiments was precisely that which was deduced from the preceding observations; namely, that carbonic acid has a directly deleterious influence upon the animal functions, in whatever way it may be introduced into the system.—*Lond. Med. and Phys. Journ. Oct.* 1832.

7. *Endosmose.*—M. Dutrochet has communicated to the Royal Academy of Sciences, a memoir on the power of endosmose considered comparatively in certain organic liquids. The author has employed in his experiments albuminous water and gelatinous water, the density of which was 1.01. The mean of ten experiments have shown that the power of gelatinous water is to that of albuminous water as 1 to 4. If we compare in this respect solutions of sugar, of gum Arabic, of gelatin and of albumen, of the same specific gravity, we find the relative power of endosmose of each to be represented by the following numbers:—

Gelatinous water - - - - - - - - -	3.
Gum water - - - - - - - - - -	5.17
Sweetened water - - - - - - -	11.
Albuminous water - - - - - - -	12.

"My experiments," remarks M. D. "have proved that endosmose is one of the principal vital actions in vegetables; it is very probable that it is the same in animals." He founds this opinion upon the fact, that in these last, that the degree of vitality is greatest in the organs which are essentially albuminous, as the nervous system, and that it is very feeble in the gelatinous organs, as the bones, the cartilages, the tendons, &c. "May it not be," asks the author, "that the considerable difference which exists in the power of endosmose of the gelatin and albumen, is the source of certain physico-vital phenomena, which result from the organic association of these two substances?"—*Archives Générales, Oct.* 1832.

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8. *Cases of Aphonia, depending upon an Affection of the Head.*—Dr. John Webster relates in the *London Medical and Physical Journal*, for October last, the four following interesting cases of this description.

Case I. George Wright, æt. 16, groom. When first seen, this patient had an attack of bronchitis, which was, however, soon removed by the exhibition of demulcent and aperient medicines, and the application of a blister to the chest: on the 14th of January last, he was considered free from all pectoral complaints.

Nevertheless, at this period an affection or weakness of voice showed itself; and, on the 16th, it became so remarkable that Wright could only with the greatest difficulty make himself heard by the bystanders, being scarcely able to speak, even in the lowest whisper. Notwithstanding the presence of this symptom, he did not complain of any pain in the throat or chest, nor was there any dyspnœa; but the patient now for the first time mentioned that he had a severe head-ache, accompanied by drowsiness and deafness; and, on examining the pupils of both eyes, they were observed to be very much dilated, and almost